REMARKS/ARGUMENTS

The Amendment to the Specification:

The specification has been amended on page 1 to insert the status of the parent application.

The specification has also been amended on page 2 to provide matter that was inadvertently omitted in typing of the application. The added matter can be found in the sentence bridging pages 2 and 3 of the parent application, copies of which are enclosed in the Appendix of this paper.

The Amendment to the Claims:

Claim 1 has been amended to incorporate the examiner's suggestions in paragraph 3 of the Office action.

The claims have also been amended to direct all claims to the preferred treatment of polyethylene surfaces with a coating containing polyethylene particles.

Claims 1 and 9 have been amended to recite that the heating is sufficient to melt both the coating and the coated surface. Support for this amendment appears in the specification on page 4, lines 27-30.

The Invention:

Applicants' invention is a method for imparting a permanently roughened surface to a polyethylene object, Coatings do not readily adhere to polyethylene, which is the most resistant to coatings of all the polyolefins. Applicants have achieved permanent modification of the surface of even polyethyelene by a method in which inorganic particles are fused into the surface of a polyethylene object.

The Rejection:

Claims 1-4, 6, 9 and 10 were rejected as unpatentable under the provisions of 35 U.S.C.§ 103(a) over Jenett in view of Hoopman et al.

Claims 5, 7 ,11 and 12 were similarly rejected over Jenett in view of Hoopman et al .in further view of Brant et al.

Claims 8 and 13 were similarly rejected over Jenett in view of Hoopman et al in further view of Kagota et al.

Applicants' Arguments:

The Office action fails to credit the claims with the literal meaning of the terms "melt temperature" and "fuse the coating into the surface". Fusion requires melting. The word is defined as:

> "1: .the act or process of liquiefying or rendering plastic by heat; 2: a union by melting." See the enclosed copy of page 340 of Websters Seventh New Dictionary.

The application of the literal meaning of these terms requires that the surface and the coating are both heated to a molten condition. It is physically impossible to fuse a coating into a coated surface unless the coated surface is melted.

Jennett discloses that a coating applied to the surface of a plastic object is to be heated to a temperature which is 80° C. to 5° C. below the melting point of the [coated] surface; see claim 3, lines 32-36 . The examiner has cited col. 2, lines 14-30; col. 4, lines 59-65 and col. 5, lines 9-12 of the reference to support the assertion that Jennett teaches fusion The actual disclosure teaches that the coating is fused, not that the coating and the surface are fused together. Significant is the statement that the heating is to raise the coating to an elevated temperature below the softening point of the base to fuse and level the polyethylene material and form a homogeneous film (col. 2, lines 24-28). The coating is bonded to the base (col. 2, lines 28-30}; it is not fused into the base as required by applicants' claims. This is restated at col. 4, lines 63-64, as: "[temperature] ....below the softening point of the base..." See also col. 5, lines 39-40 where it is stated: "up to just below the melting point of the base".

The examiner has recognized these distinctions, as apparent from the rejection at page 4, last paragraph where the examiner states:

> Thus the sole difference between the claims and combination of references is that Jenett just approaches the melting point whereas Applicants just reach the melting point, so the difference is a matter of one or a few degrees.

The examiner then states that in this instance, it is incumbent upon Applicant to establish criticality of this difference. Applicants submit that they have already established the criticality of the difference. Without reaching the melt temperature of the base surface, the surface of the base cannot melt; without melting of the base surface, the coating can not fuse into the base surface; and without fusion of the coating into the base surface, there can be no permanency of the coating.

On page 5 of the rejection, the examiner suggests that the difference between the reference and applicants' claims is blurred by the fact that a polymer doesn't have a sharply defined melting point, but has a melting point temperature range. This thought must be applied equally to the reference. When the reference teaches that the heating is to be below the melting point, and even below the softening point, it clearly teaches that the heating is below the lowest temperature of the melting point range.

The examiner has also suggested that one skilled in the art would obviously heat the surface to a point where it would become tacky. This of course is directly contrary to the teachings of the reference, which teaches clearly that the heating should be to a temperature below the softening point and certainly below the melting point. How can it be obvious to ignore the explicit teachings of the prior art?

The Hoopman et al reference has been cited for a suggestion of incorporating inorganic particles in the coating composition of Jenett. Hoopman et al disclose coating a backing with a mixture of inorganic particles in a binder, i.e,, glue. The binder is a thermosetting resin, although thermoplastics can also be used. There is no suggestion that the coating is fused into the backing. Jenett discloses a mixture of polyethylene and ink (or pigment dispersion). There is no suggestion in any of the prior art that there would be any purpose in substituting the inorganic abrasive particles of Hoopman for the ink used by Jenett. More importantly, Hoopman et al do not cure the fatal defect in Jenett, which is the failure of that reference to disclose heating of a coated surface to the melt temperature of the surface of the coated article to achieve fusion of the coating into the surface..

The Brant et al reference has been cited for a suggestion of the use of a hydrocarbon resin as a tackifier. Applicants use a tackifier to provide temporary bonding of a liquid coating to polyethylene surface until the coating is heated to dry the coating and fuse it into the surface of the polyethylene object. Brant et al disclose the use of a tackifier which is coated onto a copolymer of ethylene and a C_3 to C_{12} olefin comonomer to obtain a cling film. There is no suggestion that a tackifier which functions in the prior art to impart a cling property to a dry film would be functional as a tackifier for a liquid coating, nor is there any suggestion in Jenett that such a tackifier would be of any benefit in the Jenett coating. As with the Hoopman et al reference, there is no suggestion to heat a coated to the melt temperature of the surface of the coated article achieve fusion of the coating into the surface.

The Kagota et al patent has been cited for a suggestion of suspending polyethylene and a tackifier in water for use as an adhesive. This patent, however, teaches that it is necessary to incorporate hydrophilic groups, i.e., carboxyl groups, in the polyethylene; see column 3, lines 32-52. Again, as with Hoopman et al and Brandt et al, there is no teaching which cures the defect in Jenett, i.e., the failure to disclose heating of a coat surface to the melt temperature of the surface of the coated article to achieve fusion of the coating into the surface.

In summary, the prior art is the antithesis of obviousness of Applicants' claimed invention. The prior art explicitly teaches do not heat a coated surface to its melting temperature. Yet heating to this temperature is essential to Applicants' invention, for it is only by heating sufficiently to melt the coated polyethylene surface, that the coating can be fused into the surface, a result that is essential to achieve a permanent coating.

The claims are believed to be of proper form and scope and recite invention over the prior art. Examination and allowance are solicited.

Respectfully submitted.

Robert E. Strauss

760 360-0251